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Contribution from the Office of Markets and Rural Organization, CHARLES J. BRAND, Chief.

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THE HANDLING AND MARKETING OF THE ARIZONA-EGYPTIAN COTTON OF THE SALT RIVER VALLEY.

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INTRODUCTION.

Since 1913 special work upon the handling, classing, and marketing of the long-staple varieties of cotton grown in this country from Egyptian seed has been under way. Basic work was done during that year, and aid was given by the Department of Agriculture in continuing certain phases of it during the season of 1914.

The work in 1913 was undertaken at a most opportune time, in the month of October, when picking had just begun. It was possible, therefore, to observe closely not only the condition of the cotton in the field, the methods of picking, handling, and storage of the seed cotton on the farms and at the gins, but also the ginning of the cotton on roller gins. This opportunity of watching the handling of Egyptian cotton from the time it is picked until it is loaded into cars preparatory to its departure for the mills made it possible to note accurately the effect of proper and improper handling of the cotton.

NOTE.—This bulletin should be of interest to growers in Arizona and in California, and to dealers in Yazoo and Mississippi Delta cotton. It should be of interest to spinners in New England and the Carolinas and to spinners of fine yarn in England and on the Continent.

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The purpose of this bulletin is to record the results of these investigations, with special attention to the handling and marketing of cotton, and it records the results of the assistance given by the chief of the office of Markets and Rural Oragnization in cooperation with the Southwestern Cotton Committee.[1]

NECESSITY FOR CLEAN PICKING.

The Egyptian cotton boll is three lock and somewhat smaller than the average boll of short-staple cotton grown in the Southern States, and its small size and sharp-pointed burr make clean picking a more difficult task than is the case with ordinary Upland cotton. Since the long, silky fibers of the Egyptian cotton are to be used in the manufacture of fine combed yarns, a great majority of which are mercerized and go into the making of fine goods that resemble silk, it is essential that it be picked free of leaf and hulls. The roller gin does not clean the foreign matter from the seed cotton as some saw gins do, hence the necessity for clean picking by hand. In order to accomplish this end it has been found necessary to pay as high as 2 cents per pound for picking, which enables the laborer to pick the Egyptian cotton carefully and still make a good wage for his day's work.

The cotton pickers of the Salt River Valley are white settlers from Texas and Oklahoma, Mexicans, and Indians from the Papago and Pima Reservations. At first there was a tendency on the part of the pickers to gather the cotton rapidly, making a very large wage at the expense of the grade of the cotton. To avoid this difficulty the farmer was advised that the price and quick sale of his cotton depended largely on the grade, which meant that he must insist upon his cotton being picked clean. The results of clean picking can be seen clearly in the table of grades (see Table II, p. ——). It will be noted that the Mesa and Tempe cotton was picked cleaner than that grown elsewhere in the valley. This clean cotton may be accounted for by the fact that the Indians, who are known to be slow but good pickers, gathered a large part of the Mesa and Tempe crop. This is the first time that Indians have been used as cotton pickers in a commercial way (see Pl. I, fig. 1).

[1] This committee is composed of five members, as follows, the first named being chairman: C. S. Scofield, agriculturist in charge of Western Irrigation Agriculture; W. T. Swingle, physiologist in charge of Crop Physiology and Breeding Investigations; O. F. Cook, bionomist in charge of Crop Acclimatization and Cotton Breeding Investigations; T. H. Kearney, physiologist in charge of Alkali and Drought Resisting Plant Investigations; Charles J. Brand, chief, office of Markets and Rural Organization in charge of the Cotton Handling and Marketing Investigations herein described. This committee was organized to study the economic and agricultural problems connected with the establishment of this new industry, especially on the irrigation projects of the Salt River Valley of Arizona and the Imperial Valley of California, and it is practically to this committee that the industry in these regions owes its origin and development. For a description of the establishment and development of the Arizona-Egyptian cotton industry in the Southwest, see Scofield, C. S., Kearney, T. H., Brand, C. J., Cook, O. F., and Swingle, W. T., Community production of Egyptian cotton in Arizona. U. S. Department of Agriculture Bulletin 332.

As a whole, the picking in the Salt River Valley was very fair, as will be seen by Tables I, II, and III, which show a good average grade. Table II shows that by careful and clean picking the greater portion of the crop can be made to grade Choice and above. It will be noted that there were only 72 bales of Medium and 274 bales of Standard out of the crop of 1,237 bales ginned at Mesa.

STORAGE OF SEED COTTON.

The storage capacity for seed cotton at the gins was inadequate during both seasons, and as there were no seed-cotton houses on the farms, the cotton in a great many instances had to be piled in a corner of the field, on the ground, until enough could be accumulated to make up a wagonload. The majority of the farmers live at a considerable distance from the gins, and the expense of hauling only a fraction of a wagonload is prohibitive. At the same time, the cotton left on the ground was subject to damage by exposure to heat, heavy dews, and rains. Seed cotton, loaded in wagons, was left standing in the fields, in barnyards, and at the gins. The cotton neglected in this manner was subject to damage by exposure, as it absorbed a certain amount of moisture and was ginned damp. Damp or wet cotton does not gin smoothly, but produces a curly and matted condition of the fiber, which lowers its grade and value. Unfortunately, the result was very marked in this case. In January, after a period of rainy weather which lasted several days, some of the cotton was so wet when ginned that the friction of the rollers against the knife-edge heated the cotton greatly, thus subjecting it to undue damage. The curly condition due to the ginning of wet cotton was very noticeable after each rain.

GINNING THE ARIZONA-EGYPTIAN COTTON.

The first half of the crop ginned in 1913 contained a great many crushed seed in the cotton; in fact, during the first part of the season all of the roller-gin stands at Mesa and Chandler were crushing the seed. It was found that the amount of crushed seed was greater at the ends of the rollers, where at times whole seeds would work around the end. Crevices were found in the rollers between the walrus-hide strips, where the seed would catch and be conveyed to the knife-edges. Here they would be crushed between the knife and the roller, passing into the lint. This defect in the gins was discovered and remedied.

The ginner at Chandler discovered that the rollers were 2 inches too short for the frame of the gin. The rollers were extended to make them the proper length, thereby preventing further crushing of seed. With this fault corrected and the walrus-hide covering on the rollers made smooth and free from crevices, the gins worked with satisfactory results. It was also found that on dry and well-handled seed cotton the gins did excellent work.

As it was about the middle of January when these corrections were made it was not until after that time that the best grades of cotton were produced at the gins. Under ordinary conditions it is usual to expect the best grades to be made from the first cotton picked, but due to these conditions at the gins the higher grades were made from that part of the crop which was picked in the middle of the season. This accounts for the relatively few bales of Fancy found in the crop. (See Tables I, II, and III, pp. 9 and 10.)

In the season of 1914 the Tempe and Mesa gins were equipped with cleaners and feeders which, when the cotton was dry, beat a great deal of the leaf out of the cotton before it went into the gin stand. The manager of the Tempe gin, finding it essential to have the cotton dry in order to do proper ginning and also to lessen the wear on the walrus-hide rollers, arranged a system by which the seed cotton, when damp, was drawn by suction from the wagon, dropped through the center flue of the storehouse, a distance of about 40 feet, then was conveyed through the air-blast pipes for approximately 40 feet, returned to the seed house, and then conveyed to the gin stands. This process dried the lint considerably and allowed the cleaners to knock the leaf out of the cotton, thereby improving its grade.

SAMPLING COTTON AT THE GIN STANDS.

In order to secure a thoroughly representative sample of the Arizona-Egyptian cotton which would show the average quality of the cotton in the bale, the following method of sampling at the gin stands was inaugurated:

The workman whose duty it was to gather the cotton from the gin stands and convey it to the press box was instructed to take a handful of lint cotton from each gin stand when a wagonload of seed cotton was started through the gin, then to take another when the seed cotton was about half ginned, and a third when the ginning of the bale was nearly completed. It will be seen that by this method samples were secured which represented the cotton in different parts of the bale. In the case of gins operating 10-roller gin stands the taking of samples from each gin stand, at the beginning, middle, and completion, will give samples from 30 parts of the bale. The amount of cotton thus taken from the bale will weigh about 1 pound, and will be of sufficient size to split into types, on which sales may be made, and will do away with the practice of cutting the bagging at each sampling. Such cutting of the bagging not only wastes as much cotton as is taken out at the gins for the sample, but opens a way for further waste and damage, and also causes greater danger of fire. The effect of cutting the bagging of a bale several times for sampling purposes is shown by Plate I, figure 2, which represents an Arizona-Egyptian bale as it arrived in Liverpool.

BALING AND COVERING THE COTTON.

All press boxes in the Salt River Valley are standard size, i. e., 27 by 54 inches, thus pressing a bale to approximately 12 pounds density to the cubic foot. This size is known to the cotton trade as a flat or uncompressed bale, and is similar to the great majority of the bales put up by the gins throughout the South.

It is very difficult to secure bales of regular and uniform weight, as the weight and size of the bale depend upon the weight of seed cotton brought to the gin by the farmer. The manager of the gin weighs the wagon and cotton together on platform scales, and by deducting the weight of the wagon from the total he obtains the weight of the seed cotton. From the weight of the seed cotton the ginner is able to estimate the weight of the bales he will make out of the wagonload of cotton. It is undesirable to have a number of small lots of cotton left over to be stored; therefore the ginner uses all of the seed cotton which the farmer has on his wagon and distributes the weight into the most convenient number of bales. He may be able to make either three light-weight or two heavy bales.

The first cotton baled in the Salt River Valley was not covered sufficiently. Side strips were not used, nor were the heads properly covered. One of the gins used second-hand sugar bags as a wrapping, which were too light in weight and were more or less rotten, thus affording very little protection. Plate I, figure 2, shows that the covering of the cotton thus baled was not such as to afford protection against country damage and fire under the present method of sampling. During 1913 one gin used a good quality of bagging and baled the cotton properly. Every gin should use a good quality of new bagging or a heavy burlap of sufficient strength to withstand rough handling.[1]

ADVISABILITY OF GIN COMPRESSION.

A great improvement in the existing methods of marketing the Arizona crop could be made by the use of gin compresses. There are a number of well-known types of presses which give good results with cotton from the condensers of the saw gin outfit. The roller gin does not adapt itself to feeding into the roller feeder type of press. A gin compress without the roller feature is as well adapted to pressing cotton from a roller as from a saw gin. The establishment of such a press for general use in Arizona might introduce a great saving to the producer in the way of samples, compress fees, and freight charges. It is a well-known fact that the gin-compressed bale is easier to handle and takes up less space (see Pl. I, fig. 3, and Pl. II, fig. 2), as the cotton is usually pressed to a density of 30 pounds per

[1] No. 2 Calcutta bagging has been found to be of suitable weight and strength.

cubic foot, thus allowing 100 bales, which constitutes a unit sale and shipment of cotton, to be loaded into a standard freight car 36 feet long, whereas only 40 bales of flat or uncompressed cotton can be loaded into a car of the same size. Cotton put up by a gin compress can be shipped by railroads to ship side at the compressed rate, and if requested, the steamship companies will make a better rate on cotton of 30 pounds density than on the old-style compress bale of about 22 pounds density, as a greater amount of this cotton can be stored in the same space in the hold of a steamship.

Another great advantage which gin compression affords is that if the bagging remains uncut, a farmer who grows a particularly good quality or variety of cotton would have his identifying mark on every bale. If a farmer furnished a good quality of cotton under his mark, the spinners would learn to recognize it and to demand a certain mark or brand of cotton suitable for their requirements.

TAGGING, MARKING, BRANDING, AND WEIGHING THE COTTON.

In order to secure accuracy and safety in handling, the following method of procedure was recommended by the representative of the Department of Agriculture and used during both seasons:

Tagging.—As the bale came out of the press box a fair-sized heavy tag was attached by means of a double copper wire. On this tag was printed the name of the gin and location and a serial number. The tag carried one or more coupons bearing the corresponding serial number. One of these coupons was detached and placed in the sample of the cotton.

Marking.—The marking was done by means of stencils, with 4-inch letters. The size of the letters to be used should be governed by the quality of the bagging on the bale. For a covering of burlap a stencil with letters of 4 inches is large enough to be legible. On regular jute bagging weighing 2 pounds to the yard 6-inch letters should be used. Six-inch letters are large enough for marking cotton covered with any well-woven bagging.

Branding.—The planter's mark and the gin number were placed on the head of each bale, and the bale was branded on the sample-hole side. It was recommended that each organization of cotton growers adopt a brand which would identify the cotton not only as Arizona-Egyptian cotton, but as Egyptian cotton grown by a particular organization.

Weighing.—The Arizona-Egyptian cotton is sold on net weight—that is, on the total weight less the tare. The tare of a gin-compressed bale can be determined more accurately than the tare of one which is flat or uncompressed. The bale is uniform in size and shape, and for this reason the amount of bagging and ties will be of uniform weight. Consequently when a gin-compressed bale is weighed at the gin the shipper knows exactly how many pounds to deduct for tare.

STORAGE OF GINNED EGYPTIAN COTTON.

Although there is very little rainfall in Arizona, it is at times sufficient to wet any baled cotton that is left uncovered and exposed to the weather, thus causing considerable country damage. The storing of cotton not only protects it against damage by the weather, but furnishes collateral security for obtaining loans by the farmer until he is prepared to sell. In the event that no warehouse is available the baled cotton should be removed from the gin platform to a cotton platform of sufficient distance from the gin to comply with insurance regulations. If this platform is not large enough for all of the cotton, it should be ranged in the yard on dunnage, which is formed by skids or stringers, to raise the bales at least 4 inches above the ground, thus leaving them high enough to prevent damage and to allow free circulation of air under the bales. These bales should be turned over at intervals in order to allow the under side to dry, as, in spite of the dunnage, it is liable to absorb a certain amount of moisture.

Information secured at the Mesa gin in January, 1914, serves to illustrate how quickly cotton will damage. Some of the cotton at Mesa was placed on the planks as described, and the remainder was left standing on the head of the bales on the ground. When the cotton was moved for shipment, it was found that the heads were damaged to an extent which ranged from 1 to 7 pounds per bale. (See Pl. III, figs. 1 and 2.) This damaged cotton was a total loss to the farmer, as the railroad and steamship companies have stringent rules regarding it. They will not accept cotton that is damaged unless a clause is attached to the bill of lading stating that the cotton is in bad condition. A bill of lading containing such a clause frequently is refused by the purchaser, or, if accepted, the cotton is subjected to a close scrutiny. In a case where damaged cotton is accepted, the buyer very often, in picking off the damaged parts, removes at the same time more of the good cotton than is necessary. This amount of damaged material removed from the bales reduces the weight of the cotton, and a claim for loss in weight is made against the shipper.

CLASSING THE ARIZONA-EGYPTIAN COTTON.

The Arizona-Egyptian cotton was a new variety for which no standards for grades or staples existed, and there were no terms other than those in use by the Egyptian cotton trade by which this new staple could be described, while for all other varieties there were standards in use with trade names which designate the quality by which the cotton is sold. Hence the evident need of types for classing the new Arizona staple cotton.

The representative of the department during the season of 1913 established types which became fairly well known to the Salt River

Valley Cotton Association. The types were also used in part as a basis of business done with cotton merchants and mills in the East. During the season of 1914 work was continued on these types, taking into consideration the quality of the crop during both seasons, with the idea of perfecting them so that the Department of Agriculture could promulgate them later as standards.

The amount of leaf, trash, foreign matter, and dead cotton, and the color, are determining factors in establishing the grade. The bulk of the crop of cotton up to the time of the first killing frost should grade better than the basis grade, Choice, provided the cotton pickers exercise a due amount of care in picking. The plant is alive, the leaves firm, and the cotton is free of boll stain and can be picked free of leaf. After a frost the plants are killed, the leaves dry and shrivel up, breaking into small pieces which adhere to the cotton when picked from the open boll. The frost having killed the plant, the boll is forced open before all of the fibers are mature. The action of the frost on the sap in the cotton boll stains the lint, and also causes flakes of cotton in the boll to perish; that is, the staple or fiber is attacked by a fungus growth which discolors and weakens the fiber.

In making up types the following points were taken into consideration:

(1) Amount of leaf, hulls, or foreign matter in the bale.
(2) Color of the lint cotton.
(3) Silkiness.
(4) Amount of boll stain, dead cotton, etc.
(5) Length of fiber.
(6) Strength of fiber.
(7) Uniformity of length.

The Arizona grades, as worked out during this investigation and study, with their equivalents in Egyptian cottons—corresponding to the Official Cotton Standards of the United States in leaf only—are as follows:

Fancy.—Clear and clean, creamy color (allows about as much leaf as Strict Good Middling, United States Government Standard), and is equal to Extra Fine Sakellaridis Egyptian.

Extra.—Clean, creamy or slight color (allows leaf about equal to Good Middling, United States Official Standard); equivalent to Fine Sakellaridis Egyptian.

Choice.—Allows color after frost (allows leaf equal to Strict Middling, United States Official Standard); equivalent to Good Sakellaridis Egyptian.

Standard.—(Leaf equal to Middling, United States Official Standard.) Equivalent to Fully Good Fair to Good Fair Sakellaridis Egyptian.

Medium.—(Leaf equal to Strict Low Middling, United States Official Standard.) Equivalent to Strictly Good Fair Sakellaridis Egyptian.

FIG. 1.—INDIAN COTTON PICKERS.

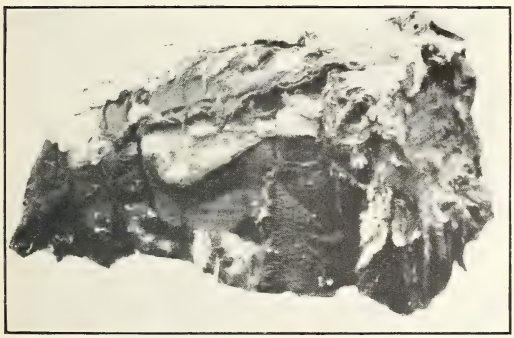

FIG. 2.—AMERICAN BALE IN LIVERPOOL, SHOWING IMPROPERLY-COVERED COTTON.

FIG. 3.—GIN-COMPRESSED BALE.

FIG. 1.—GIN OR "FLAT" BALES ON RIGHT; RAILROAD COMPRESSED BALES ON LEFT.

FIG. 2.—GIN-COMPRESSED BALES.

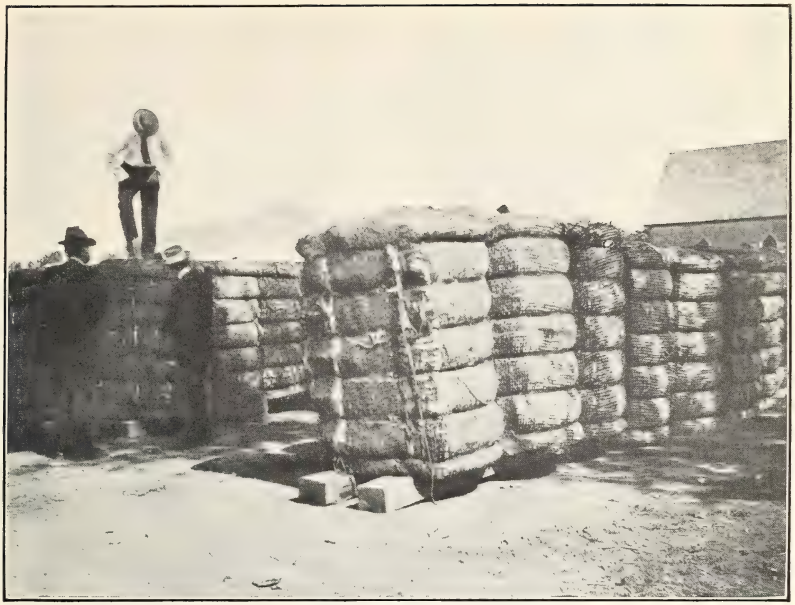

FIG. 1.—COTTON RESTING ON DUNNAGE.

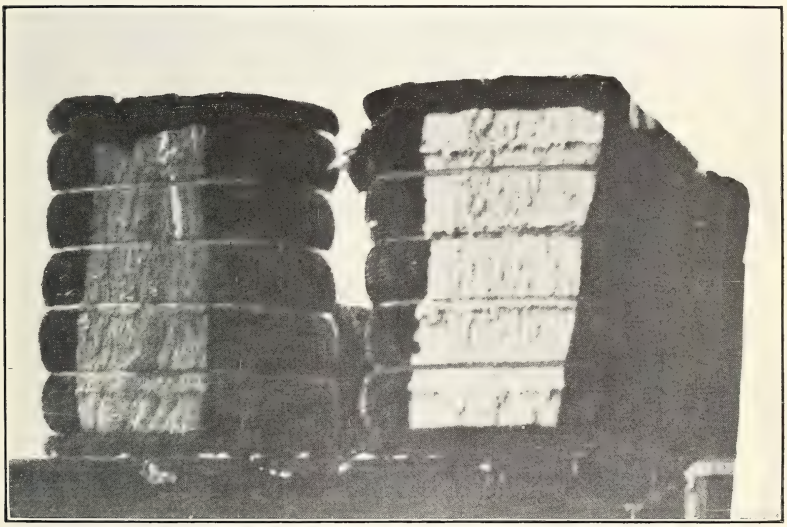

FIG. 2.—THE DARKENED SURFACE OF THE FIRST BALE SHOWS COUNTRY DAMAGE CAUSED BY THE FACT THAT IT WAS LEFT ON THE GROUND.

STAPLES.

The three staple lengths of the Arizona-Egyptian cotton were grouped as follows: The longest and best staple was named Sacaton, the next was named River, and the third Valley. The following is a comparison between the lengths of staple of the Arizona-Egyptian cotton and the varieties of Egyptian cotton:

The Sacaton staple is equivalent in length to that of the best Sakellaridis imported into this country.

The River staple is equivalent in length to that of the best Janovitch.

The Valley staple is equivalent to the best Mit Afifi.

This comparison was later confirmed by spinners of New Bedford, Mass., brokers throughout New England, by merchants in England, France, and Germany, and by the chairman of the arbitration committee of the Liverpool Cotton Association.

The New Bedford, Mass., fine-goods mills called the Sacaton staple $1\frac{7}{16}$ to $1\frac{1}{2}$ inches, River staple $1\frac{3}{8}$ to $1\frac{7}{16}$, Valley staple $1\frac{1}{4}$ to $1\frac{5}{16}$ inches in length; other mill points using such cotton will call the staple about one-eighth of an inch longer. These differences in the estimation of lengths are well known to the trade and prices for identical lengths and qualities are very similar.

The buyers for fine-goods mills of New England call the staple shorter than do the English, French, or German spinners. Prominent cotton merchants of Liverpool and Manchester, England, Havre, France, and Bremen, Germany, called the Sacaton staple 42 millimeters in length, which is equivalent to a fraction over $1\frac{5}{8}$ inches, while the chairman of the arbitration committee of the Liverpool Cotton Association declared it to be equal to the Egyptian variety of Sakellaridis.

The following tables are given to show the number of bales of each grade and staple ginned in each of the localities in which cotton was grown in the Salt River Valley during the season of 1913:

TABLES OF CLASSIFICATION OF ARIZONA-EGYPTIAN COTTON IN 1913.

[This cotton was classed in even-running lots of 25 and 50 bales each.]

TABLE I.—*Class of Arizona-Egyptian cotton ginned at Chandler, Ariz.*

Grades.	Sacaton staple.	River staple.	Valley staple.	Total.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Fancy	1	2	.....	3
Extra	39	54	.....	93
Choice	20	35	15	70
Standard	9	62	47	118
Medium	1	16	16	33
Total	70	169	78	317

TABLE II.—*Class of Arizona-Egyptian cotton ginned at Mesa, Ariz.*

Grades.	Sacaton staple.	River staple.	Valley staple.	Total.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Fancy	24	12	.....	36
Extra	388	78	.....	466
Choice	272	117	.....	389
Standard	182	80	12	274
Medium	26	39	7	72
Total	892	326	19	1,237

TABLE III.—*Class of Arizona-Egyptian cotton ginned at Glendale, Ariz.*

Grades.	Sacaton staple.	River staple.	Valley staple.	Total.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Fancy	.....	.....	.....	.....
Extra	.....	.....	.....	.....
Choice	1	5	.....	6
Standard	6	31	4	41
Medium	7	46	8	61
Total	14	82	12	108

ADVANTAGES OF GRADING COTTON.

To conduct the business in the proper way, and in order to secure the best results, a buyer, in whatever line of business he may be, wishes to secure the material that is going to produce the desired result. For this purpose he will see that the material that he buys meets his requirements in every detail. This is true of the cotton manufacturer. A cotton-mill man who has sold a specific number of yarn requires a definite grade and staple of cotton in order to make this product. The broker has a certain knowledge of the requirements necessary to make the different yarns. The treasurer or president of the mill knows what kind of cotton he needs. He requests his broker to make him an offer of a specified number of bales, shipment to be prompt or equal portions of it to be made at stated intervals. Everything being satisfactory, the sale is consumated, and it then rests with the broker to secure the required cotton.

If he can buy the cotton in even-running lots, the broker offers it at a price which allows a small profit to himself. However, if he be compelled to buy the cotton unclassed, or in a "hog round" lot, of which perhaps 25 per cent may not be suitable for his needs, that amount of cotton has to be stored and disposed of in some other way. Therefore he must buy his cotton at a price that will allow carrying charges and insure a profit sufficient to cover a possible loss. From this it will be seen that if cotton is sold in "hog round" lots the price secured will not be as good as when the cotton is sold on grade, each grade bringing its own price. When a lot of cotton is sold at an

average price for the various grades composing it, the high or best grades do not yield a just return, and the farmer does not receive a fair value for his product. The farmer whose low grades are bought at the same price, however, receives too high a price, but it is at the expense of the farmer who is selling the high-grade cotton.

MARKETING OF ARIZONA-EGYPTIAN COTTON.

In 1913 and in 1914 the cotton associations of Arizona, after conference with officers of the department, sent a representative to New York, Boston, Providence, and other American cotton markets in which Egyptian cotton is sold. In 1914, through the Committee on Southwestern Cotton Culture, arrangements were also made for sending this agent on to England, France, and Germany to introduce the Arizona staple cotton in those countries, and arrangements were made for selling it. The declaration of war in August, 1914, however, caused all agreements to be canceled. Marketing conditions being abnormal in 1914, the descriptions of the work of these two seasons are given separately.

In 1913 members of the Southwestern Cotton Committee of the United States Department of Agriculture met with the members of the Arkwright Club of Boston, which is an organization composed of the leading spinners of New England, at the invitation of that club. Types of the Arizona-Egyptian cotton were exhibited and the quality of the cotton and other phases of the subject were discussed, and the members of the Arkwright Club apparently were very favorably mpressed with the new long-staple crop of Arizona.

Also in this year a representative of the cotton growers of the Salt River Valley was given authority to sell, or to make the best arrangement possible, for all cotton belonging to members of the exchanges of the Salt River Valley. Types of the various grades and actual tagged samples, which represented lots of 50 bales each in even-running grade and staple, were made up and sent by this representative to show the quality of this cotton.

Sales of a part of the crop belonging to the members of the association were made direct to the cotton mills; the remainder was consigned to cotton brokers, who advanced from 12½ to 15 cents per pound, according to the class of cotton. This cotton was afterwards sold as classed out at prices that compared very favorably with sales made under similar market conditions of Egyptian cotton of similar staple and grade which was imported into this country. A small lot of the Arizona-Egyptian cotton was consigned to Liverpool, and on arrival in that market the greater portion of the cotton was sold at a very good price. These sales of the Arizona-Egyptian cotton serve to illustrate its comparative value with the Egyptian-grown cotton of similar grade and staple.

The best price obtained for this cotton in this country in 1913 was 22 cents, while a Liverpool merchant quickly bought the greater part of the offerings sent there for 11¾ pence, or 23½ cents. At this time an order was received from a mill at Fall River, Mass., for 10 bales. As it was cheaper to reship to this country at a freight rate of 25 cents per hundred pounds than to ship from Mesa at a rate based on less than a carload shipment at $3.25 per hundred pounds to Fall River, 10 of the bales consigned to Liverpool were shipped back to fill this order.

In 1914 Mesa was selected by the department's representative as the most central and convenient point for conducting the work toward establishing standards for the crop and the marketing of it according to these standards, because of its location in the district of the greatest cotton production, and because the Central Association of Egyptian Cotton Growers had established offices at that place for the handling and selling of the cotton crop of its members. Here headquarters was established and a suitable room was equipped for classing cotton.

The construction of a modern ginning plant at Tempe marked a distinct step in the development of the Central Association and of the Arizona-Egyptian industry during this year. The final satisfactory outturn of the 1913 crop, the long haul to the Mesa gin, and the inducements to an increased acreage caused the farmers to feel that the construction of this gin would be a good investment.

As the 1914 season was such an unusual one, and as the growers of the Salt River Valley succeeded in obtaining a comparatively good price for their cotton, a somewhat detailed description of the causes and methods is given here.

In the latter part of August, 1914, after the declaration of war by the European powers, the association sold 200 bales of cotton at prices equivalent to those on sales of similar grade made last season; that is, 22 cents was obtained for Extra, 21 cents for Choice, and 19½ cents for Standard grade. This sale, No. 1, was made September 1, 1914, for 50 bales of Extra, 100 bales of Choice, and 50 bales of Standard cotton, respectively, half Sacaton and half River staple, at the prices quoted above, f. o. b. Mesa or Tempe, and freight allowance to mill points, less 22 pounds per bale tare, insurance, and interest from time of payment of draft until cotton reached the mill, final settlement being made on mill weights.

On September 10, 1914, eastern brokers agreed to take on consignment 500 bales of cotton, advancing 15 cents on Extra, 14 cents on Choice, 13½ cents on Standard, and 12 cents on Medium grade, f. o. b. Mesa. This consignment was known as consignment No. 1.

On September 15, 1914, the association made their second sale. Sale No. 2 consisted of 200 bales of Standard at a slight decline from the original price.

Sale No. 3, of 200 bales, was made on September 15, 1914, after the market had declined materially. At the time of the sale, the prices seemed very low to the grower, but later they were compelled to sell at a price 1 cent per pound below these sales.

On September 19, 1914, consignment No. 2 was arranged with eastern brokers who took on consignment 1,000 bales of the Arizona-Egyptian cotton from the association, advancing a trifle less on each grade than in consignment No. 1. This consignment was sold a few days later on sale No. 5 at approximately 4 cents less for each grade, usual terms, than was obtained in sale 1.

On December 30, 1914, consignment No. 4 of 100 bales was made and shipped to brokers, who advanced 13 cents f. o. b. Mesa and Tempe on same. Later in the season it became evident that the association would not be able to fill sale No. 5 on account of the heavy rains of December, which lowered the grades to such an extent that there were very few bales of Choice and higher being ginned. As a compromise, the agents made an arrangement with the mill to which they sold the 1,000 bales of sale No. 5 to accept against that sale the 100 bales of Medium at the price of 15 cents f. o. b. Eastern points.

By these sales, the problem of marketing the crop during the season was solved.

The first Tempe cotton was classed October 5 and showed a very fair grade and a portion of it very good staple, although 3 bales, Nos. 4, 5, and 6, classed Fancy Valley, the highest grade and shortest staple. Later it was learned that these 3 bales were from volunteer or ratoon cotton, commonly called stump cotton, grown at Scottsdale. It was quite evident throughout the season that all cotton volunteered or grown from the stump was shorter in staple, weaker, and less silky than cotton grown from seed in the same field.[1]

During the season of 1914 the rainfall was unusually heavy. Although the grades had been running lower than usual, it was not until October 14 that the first Standard grades appeared. Up to this date the low grades were not entirely due to the rains, but to careless picking and to the fact that damp cotton was ginned. The percentage of low grades in 1914 was much greater than in 1913. (See Tables I, II, III, and IV.)

When it seemed that shipping was quite safe from Egypt to England, and from England to the United States, the great pressure of the Egyptian crop was thrown on the market and there was a decline of several cents per pound in the price of Egyptian cotton. The third sale of 200 bales of Arizona-Egyptian was made at this time. Although the cotton market was demoralized and prices were very low, there was a market for the long-staple variety. On October 23,

[1] See Scofield, C. S., Kearney, T. H., Brand, C. J., Cook, O. F., and Swingle, W. T., Community production of Egytian cotton in Arizona. U. S. Department of Agriculture Bulletin 332.

eastern brokers offered to take 600 bales on consignment, making substantially the same advance as before. This proposition finally terminated in a consignment of 1,000 bales, the agency advancing one-half cent per grade more than originally offered. On November 12, the same brokers telegraphed an offer on 500 bales, advising that they could sell 100 bales Extra at 17 cents and 400 bales Choice at 16¼ cents. The association authorized them to sell the 500 bales if they could apply the cotton shipped on the first consignment, thereby terminating the expense of carrying charges on it. The cotton from consignment No. 1 was applied against sale No. 4.

On November 17 the agency telegraphed their representative, advising that they could sell 1,500 bales, 750 Extra and 750 Choice grade, half each of Sacaton and River staple, usual terms, for January, February, and March shipment, at a decline of a fraction of a cent below the last sale, f. o. b. New England mill points. On account of the great amount of lower-grade cotton which appeared so early in the season, it was deemed advisable to sell 1,000 bales of the grades of Extra, Choice, and Standard, shipment to be made as soon as cotton was ginned. All shipments of the above grades on consignments were to apply on this sale No. 5, with the stipulated privilege that in case the association could not supply the full 300 bales of Extra the difference in amount could be shipped in the grade of Standard at the price for Standard named in the sale. As the October rainfall in the Salt River Valley was the heaviest in years, and as the industry was so new that the effect of excessive rains on the cotton had not been determined, it was not possible to guarantee the delivery of 300 bales of the grade of Extra.

A slow, light rain began on December 17, 1914, and continued until December 28. During this time the cotton fields were so wet and muddy that picking ceased and the gins were forced to shut down.

On December 29 cotton picking was resumed generally over the Valley. The first cotton hauled in to the gins was very damp, leafy, and discolored. The seed cotton picked after the long, continuous rain, when ginned, turned out to be of a grade inferior to the lowest type, "Medium." Samples of the low-grade cotton were marked "Rain" and expressed to a firm with whom the association had been transacting business. It was asked to name the advance it would make on the cotton and to try to place it as soon as possible. It reported that it would be very hard to sell cotton that was lower in grade than Medium, and that it was in fact difficult to sell Medium. It refused to take the very low grades on consignment and did not wish to take more of the Medium, but did agree to advance as much as 11½ cents on it.

Later in the season, after a material advance in the market, the local exchange at Tempe sold for the central association of cotton

growers 100 bales of the cotton below the grade of Medium at 14 cents f. o. b. Phoenix. A few days later the eastern agency sold the Mesa 50 bales "Rain" at 15½ cents landed eastern points. It sold the 19 bales of very low grade at 15¾ cents, and the Tempe 12 bales, which were below the grade of Medium, at 15¾ cents, all landed New England mill points, on usual terms.

The following detailed information gives account of the cotton ginned and the classification of all cotton handled in cooperation between the Office of Markets and Rural Organization and the Central Association during the season of 1914–15:

TABLES OF CLASSIFICATION OF ARIZONA-EGYPTIAN COTTON IN 1914.[1]

[This cotton was classed in even-running lots of 25 and 50 bales each.]

TABLE IV.—*Class of Arizona-Egyptian cotton grown and ginned at Mesa.*

	Sacaton staple.	River staple.	Valley staple.	Total.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Fancy grade	1			1
Extra grade	93	116	1	210
Choice grade	195	287		482
Standard grade	210	204		414
Medium grade	74	154	1	229
Below class	10	60	4	74
Total	583	821	6	1,410

[1] The Chandler Association leased their gin, and therefore are not cooperating with the central association. The Glendale Association planted short-staple cotton and changed their equipment to saw gin, and therefore are not represented in this table.

TABLE V.—*Class of Arizona-Egyptian cotton grown and ginned at Tempe.*

	Sacaton staple.	River staple.	Valley staple.	Total.
	Bales.	*Bales.*	*Bales.*	*Bales.*
Fancy grade			3	3
Extra grade	44	81	3	128
Choice grade	181	201	1	384
Standard grade	207	190		398
Medium grade	54	197		251
Total				1,164
Below class	7	115	1	123
Grand total				1,287

CONCLUSIONS.

The increase in the estimated size of the Salt River Valley Egyptian cotton crop from 280 bales in 1912 to 2,200 bales in 1913, and to 6,187 in 1914, demonstrates the peculiar fitness of this locality for the production of Egyptian cotton. The continued improvements in methods of handling and equipment will serve to improve the grade of the product, while the classing of the cotton will tend to secure a more stable market at better and more uniform

prices. Up to the present time the relatively small crop from the Salt River Valley has been so distributed that only a few spinners have been able to test this cotton. The testimony from a number of various sources, including some of the largest cotton firms, spinners, and exporters, indicates that the quality, character, and length of staple of this cotton is of such a nature as will establish for it a permanent market.

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